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International Tourism and U.S. Beaches

by James R. Houston, Director, Coastal Engineering Research Center

Introduction

Travel and tourism is the Nation's largest industry, employer, and foreign-revenue earner, and U.S. beaches are the leading tourist destination.[1,2] Clearly, beach tourism plays a key role in the U.S. economy. Although domestic tourism is sometimes thought to provide local or regional rather than national benefits, foreign tourism in the U.S. provides clear national benefits important to America's position in a competitive world economy.

International Tourism in the U.S.

"There is probably no country in the world that has a greater comparative advantage in tourism than the United States."[3] In fact, travel and tourism is one of a handful of developed-world industries that the U.S. dominates. The U.S. receives over 45 percent of the developed world's travel-and-tourism revenues and 60 percent of its profits.[4] The U.S. runs a large merchandise trade deficit, but has a trade surplus in services with travel and tourism providing the largest and fastest growing segment of this surplus. Foreign visitors spend about $80 billion a year in the U.S., producing a $26-billion U.S. trade surplus in travel and tourism.[1,5] In addition, spending by foreign tourists supports 1.4 million American jobs or more than 10 times the number of jobs in the U.S. steel industry.[5] U.S. employment relating to international tourism grew at an annual rate of 17.7 percent from 1990 to 1995. This compares with an annual 4.5-percent loss of U.S. manufacturing jobs over the same period due to increased manufacturing productivity.[6] U.S employment in international tourism is projected to increase by 18.1 percent annually from 1995 to 2000.[6] This growth rate will double international-tourism employment in the U.S. every four years. The benefits of this rapid growth will be spread throughout the U.S. economy since there are 1.4 million tourism-related businesses in the U.S., and 98 percent of them are classified as small businesses.[6] Foreign tourist spending in the U.S. is projected to rise to $132 billion in 2000.[7]

Despite significant inland tourist attractions such as Yellowstone Park, the Grand Canyon, and Las Vegas, 85 percent of all U.S. tourist revenues are earned by coastal states largely due to the attraction of beaches.[8] The size of beach tourism is illustrated by the fact that a single beach location, Miami Beach, Florida, has reported more tourist visits annually (21 million) than were made to any National Park Service property (Figure 1).[9] Miami Beach has more than twice

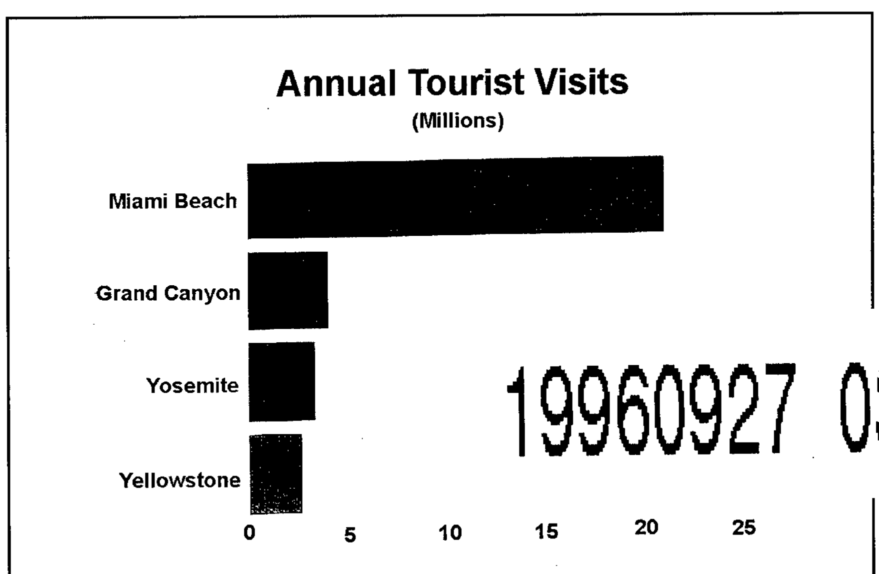

Figure 1. Annual tourist visits to Miami Beach compared with the major National Parks

the combined number of tourist visits to Yellowstone (2.6 million), the Grand Canyon (4.0 million), and Yosemite (3.3 million) National Parks.[10] Foreign tourists are even more attracted to U.S. coastal states with over 90 percent of foreign-tourist spending in coastal states.[11]

Tax Revenues

Travel and tourism produces significant tax income to all levels of government with annual revenues of $58 billion.[12] Foreign tourism produces annual tax revenues of about $7.5 billion.[6] The majority of these tax revenues (about 53% or $4 billion) go to the Federal government (Figure 2).[11] It is instructive to compare these Federal tax revenues with Federal expenditures on beach infrastructure (beach nourishment) needed to attract foreign tourists. From 1950-1993 the Federal government and its cost-sharing partners spent an average of $34 million (1993 dollars) annually on beach nourishment.[13] The Federal government share of these expenditures was about $22 million annually. Therefore, the Federal government receives tax revenues from foreign tourists that are about 180 times its expenditures restoring the Nation's beaches. Of course, tax revenues from domestic tourists far exceed those from foreign tourists. Local governments that provide most tourist-support infrastructure receive only 14.3 percent of the tax revenue from foreign tourists.[11]

The greatest tax revenues from foreign tourists are collected in Florida with annual revenues of $1.43 billion.[11] The Federal government receives about $754 million of these revenues with local governments receiving only $98 million.[11] Annual Federal tax revenues just from foreign tourists visiting Florida have been about 75 times annual Federal spending on beach nourishment in Florida (Figure 3). Federal tax revenues from foreign tourists visiting Miami Beach, Florida, are over $130 million a year, or about 65 times the Federal share of the capitalized annual cost of the Miami Beach beach-nourishment project.[8,11] In fact, the Federal government receives about 6 times as much tax revenue annually from foreign-tourist spending at Miami Beach than it spends to restore the entire Nation's beaches! Clearly, the Federal government is receiving a huge return on its beach-nourishment investment just from foreign-tourist taxes and not including taxes from domestic tourists or reduction of storm damage and resulting emergency-relief spending.

Foreign Competition

Travel and tourism's importance to world economies, employment, and international competitiveness has not been lost on America's economic competitors. For example, Japan and Germany have spent far more protecting and restoring their beaches than has the United States.[8] Spain with its extensive beaches is a major U.S. competitor in attracting international tourism, especially beach tourism. Spain is conducting a five-year program to both restore its eroded beaches and build completely new beaches. This Spanish beach-restoration program is spending more in five years from 1993 to 1998 than the United States has spent on beach restoration over the past 40 years.[14] Spain also is the world's leading advertiser for international tourists, spending 10 times as much as the United States.[15] The United States ranks 31 in the world in advertising to attract international tourists.[15]

There is a world economy in tourism that gives consumers ample choices and produces stiff worldwide competition for tourists. If beaches in Florida and other states become run down, German tourists can go to Spanish beaches. If Hawaiian and Californian beaches decline, Japanese tourists can choose Australia's Gold Coast. Australia has been restoring eroded Gold Coast beaches and recently established a cabinet-level tourism minister to better compete for foreign tourists.[16] The stiff competition for international tourists has resulted in a steady decline in the 1990's in

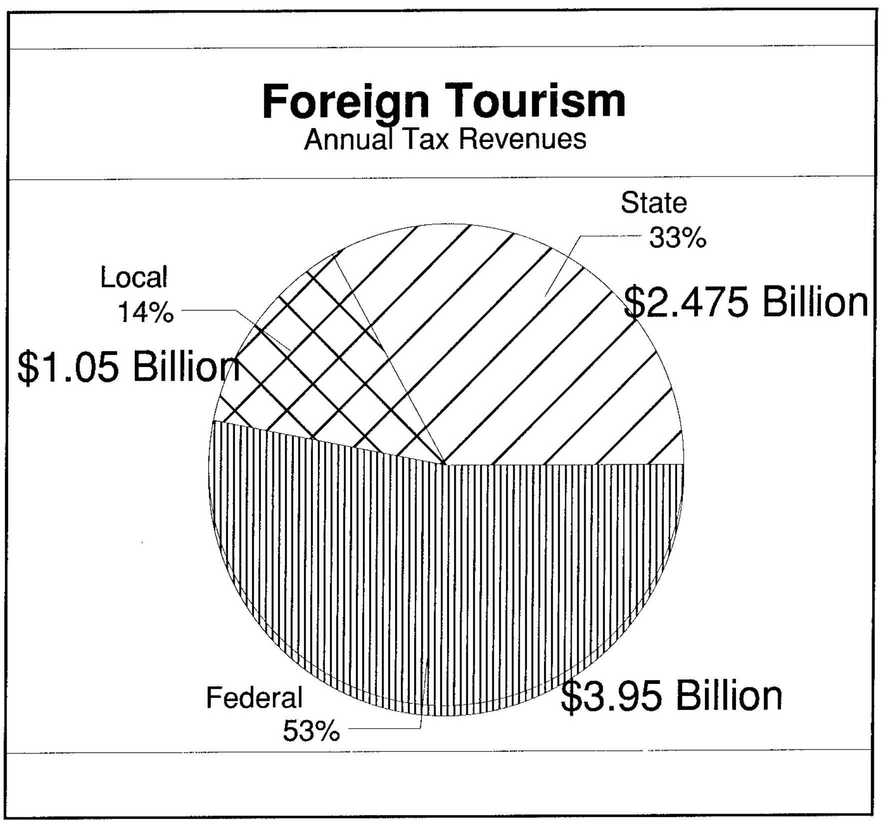

Figure 2. Annual tax revenues from foreign tourism that go to Federal, state and local governments

the U.S. market share of world-tourism receipts, and this decline is expected to continue for the remainder of the decade.[6]

Conclusions

With travel and tourism being the largest industry, employer, and foreign-revenue earner in the United States and beaches the leading tourist destination, beach tourism plays a pivotal role in the U.S. economy. Foreign tourism clearly provides significant national benefits since it provides the Nation's largest trade surplus. Foreign tourism is one of the fastest growing industries in the United States and world. However, it is very competitive, and the U.S. lead in attracting foreign tourism has been eroding. With over 90 percent of foreign-tourist spending concentrated in coastal states and with beaches the leading U.S. tourist destination, the state of America's beaches is key to maintaining the U.S. share of international tourism. The Federal government receives far more in tax revenues than it spends maintaining and restoring the Nation's beaches. To continue to be successful in competing for international tourism, America will have to maintain its beaches at the level that foreign competitors for tourism such as Spain maintain their beaches.

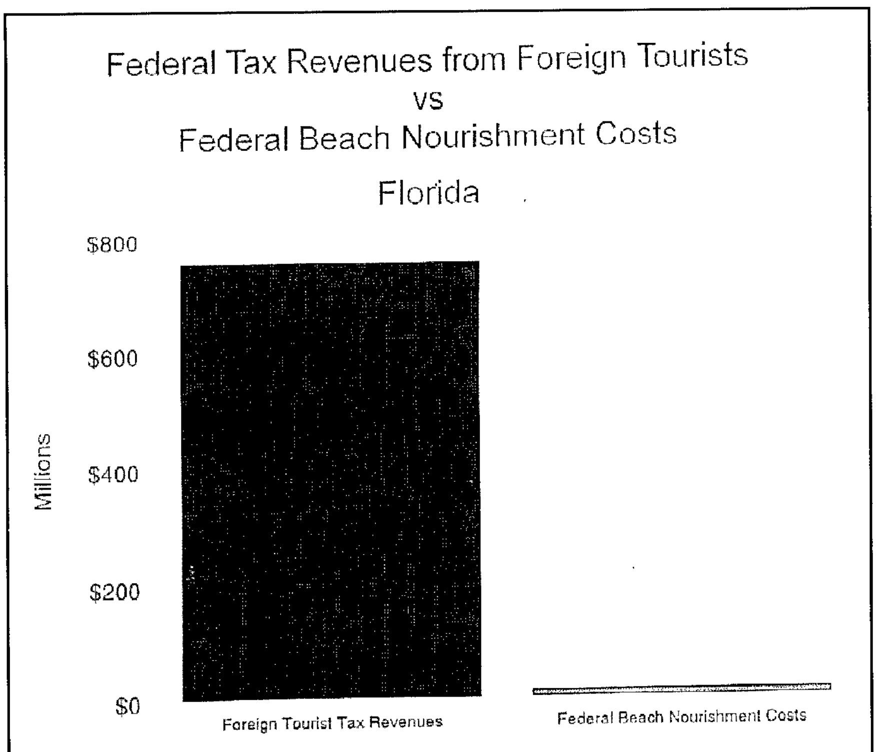

Figure 3. Comparison of Federal tax revenues from foreign tourists visiting Florida with the Federal cost for beach-nourishment projects

References

1. *Wall Street Journal*, 1995, "Travel, Tourism Will Produce 10.5% of U.S. Output This Year Study Says," Page A8, March 1, 1995.
2. *USA Today*, 1993, "More Plan Vacations This Year," Page D1, March 17, 1993.
3. *U.S. Travel and Tourism Administration*, 1993. "World Tourism at the Millennium," U.S. Department of Commerce, April 1993, 97 pp.
4. *Wall Street Journal*, 1994, "The Other American Dream Team," February 15, 1994.
5. *Business Week*, 1994. "Oh Say Can We Spend? A Weak Dollar is Luring Tourist to the U.S. in Droves," 30-31, August 22, 1994.
6. *U.S. Travel and Tourism Administration*, 1995, "Travel Outlook Forum, Forging New Strategies in Tourism Research," U.S. Department of Commerce, October 17, 1995.
7. *U.S. Travel and Tourism Administration*, 1993, "World Tourism at the Millennium," U.S Department of Commerce, April 1993.
8. Houston, James R., 1995. "Beach Nourishment," Coastal Forum, *Shore and Beach*, 21-24, January 1995.
9. Wiegel, R.L., 1992, "Dade County, Florida, Beach Nourishment and Hurricane Surge Study," *Shore and Beach*, Vol 60, No 4, 2-26, October 1992.
10. *World Almanac*, 1994. Funk and Wagnalls Corp, Mahwah, NJ.
11. *U.S. Travel and Tourism Administration*, 1994, "Impact of International Visitor Spending on State Economies," U.S. Department of Commerce, December 1994.
12. Borcover, A., 1995, "The Travel Industry Convenes for White House Conference," *Washington Post*, Page C1, October 10, 1995.
13. U.S. Army Corps of Engineers, 1994. "Shoreline Protection and Beach Erosion Control Study, Phase I: Cost Comparison of Shoreline Protection Projects of the U.S. Army Corps of Engineers," U.S. Army Corps of Engineers, Washington, DC.
14. *Ministerio de Obras Publicas y Transportes*, 1993, "Recuperando La Costa," Serie Monografias, Centro de Publicaciones, Madrid, Spain.
15. *Washington Post*, 1995, "Chefs Bemoan a Reduction in Their Favorite Deduction," Page D4, April 11, 1995.
16. Carroll, Doug, 1992, "Tourism gets little respect, travel council says," Page 2B, *USA Today*, March 31, 1992.

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ACES 2.0 Release Notes

by Wayne W. Tanner, David A. Leenknecht, and Ann R. Sherlock

The Automated Coastal Engineering System (ACES) work unit has recently added three products to ACES 2.0, the system which integrates coastal engineering prediction technology with visualization software in a user-friendly environment. Previously available methodologies in ACES 2.0 were wave transformation using Wave Information Studies (WIS) Phase III methodology (WISPHS3), simplified longshore sediment transport estimates at a point or along a reach (LSXPORT), nearshore wave transformation using the RCPWAVE model, and long-term shoreline change prediction using the GENESIS model. In addition, the wave model visualization (WMV) code provides data analysis capabilities for RCPWAVE.

New technologies added to the system include the storm-induced beach change model (SBEACH), a wave station analysis and visualization (WSAV) package, and a uniform rectilinear grid generator (URGG). Of these new technologies, SBEACH is an additional modeling methodology. WSAV and URGG assist in data access, editing, preparation, and analysis.

The SBEACH application calculates cross-shore sediment transport, and simulates beach profile change during storms that are defined by input time-series of waves, winds, and water elevations. The graphical user interface (GUI) is used in all phases of model operation, from preparing initial data to model execution and visualization. Prior to executing the simulation, the initial profile, reference profile, and seawall may be displayed. After the simulation is complete, the profile evolution, wave event, and water elevation may be animated, or stepped through forwards or backwards. Post-simulation displays also include the minimum and maximum profile elevations, maximum wave heights, maximum water elevations, and maximum water depths, in addition to tabular output.

WSAV provides statistical analysis of one or two input wave event (height, period, and direction) time-series, which may be edited or filtered in a variety of fashions. The analysis is performed based upon the user-specified band limits for wave height, period, and direction. The statistics generated by the analysis can be displayed as block diagrams (Figure 1), histograms, or as a wave rose by either percent occurrence or number of occurrences. Statistics such as the mean and standard deviation are available through a text display. An output file containing the permutations of the analysis bands can also be generated.

URGG generates grids for 2D rectilinear modeling methodologies. URGG's primary purpose is to edit and triangulate a set of randomly spaced x,y,z points and construct a uniform rectilinear computational grid. Points can be added or removed from the data set or multiple point sets can be merged into one set. An arbitrarily shaped region of random points or gridded data can be selected for local area filter operations. These filters perform tasks such as assigning a constant elevation value, applying a smoothing function, offsetting the points by some amount, and deleting or adding points. Structures such as groins and breakwaters may be placed or edited graphically using the mouse. The RCPWAVE wave transformation model can be configured and executed directly from the grid generator. Both STWAVE and REFDIF have been integrated into the grid generator. Figures 2 and 3 present results from simulations with RCPWAVE at Homer Spit, AK, and STWAVE at New York Bight, respectively.

The ACES 2.0 package is currently limited to U.S. Army Corps of Engineers distribution and support. ACES 2.0 is supported on Hewlett

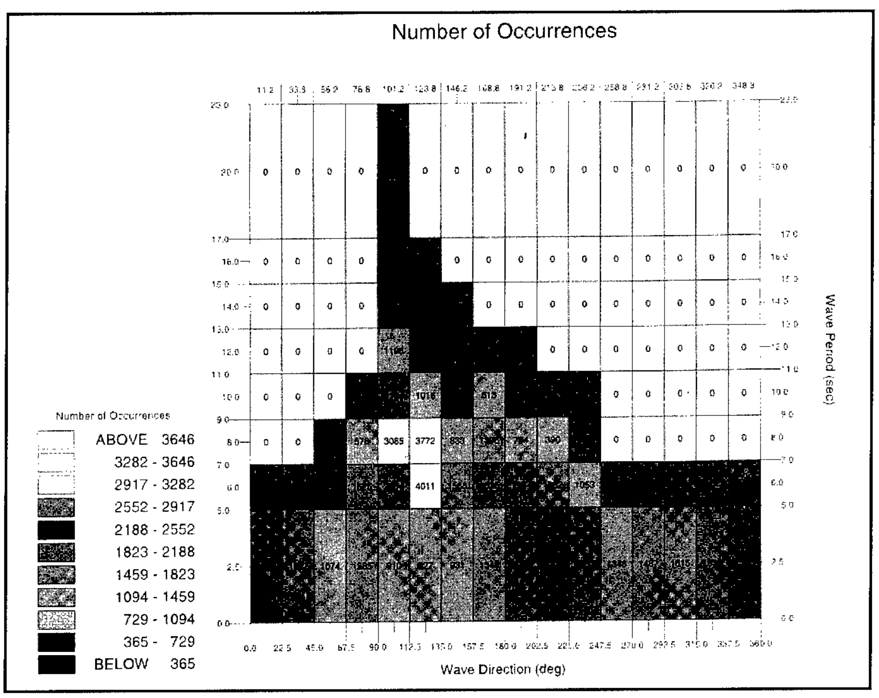

Figure 1. WSAV block diagram

Packard (HP) 9000/700 workstations and Sun SPARC workstations. An HP workstation is available for remote use by those who do not currently have a supported workstation. However, a system capable of running XWindows, such as a Unix workstation or a PC with Linux or X emulation software, must be used to access this machine. To obtain an account on this system, contact Ann Sherlock (E-mail: a.sherlock@cerc.wes.army.mil).

Minimal hardware recommendations for locally hosting ACES 2.0 products include one of the above Unix-based workstations with at least 64 MB of memory, 1 GB of hard disk space, a 19-in. color monitor, and a network connection. In addition, the Unix operating system, X Windows, TCP/IP services, and an Internet connection are required. A postscript printer is supported but not required.

Short-term plans for ACES 2.0 include integrating STWAVE and REFDIF into the grid generator and adding HARBD (Harbor Wave Oscillation Model) to the system. For additional information about ACES 2.0, contact David Leenknecht (E-mail: david@hal.cerc.wes.army.mil).

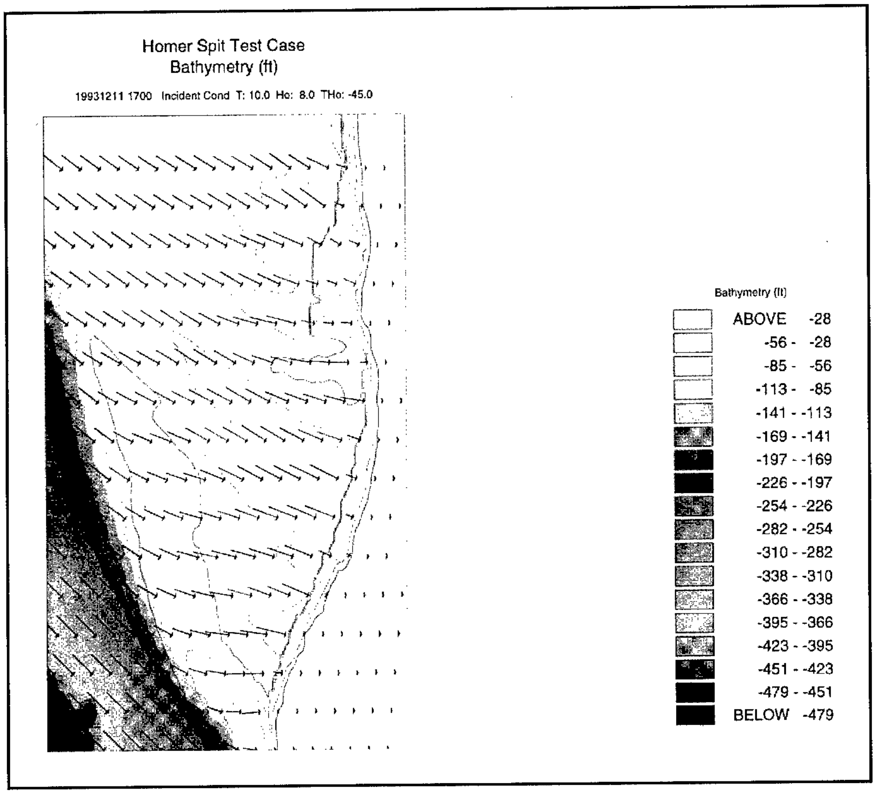

Figure 2. RCPWAVE simulation results, Homer Spit, AK

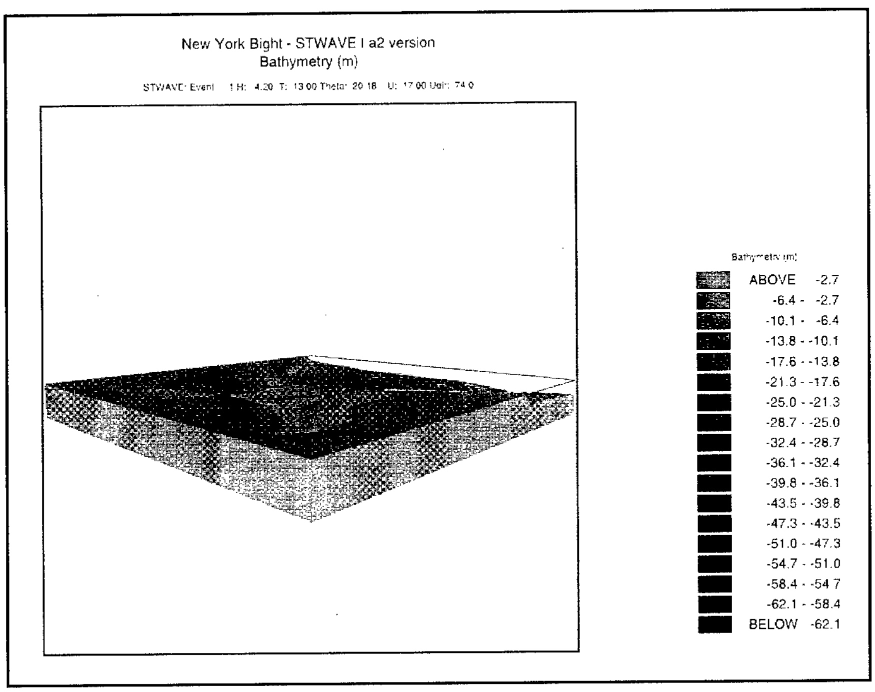

Figure 3. STWAVE simulation results, New York Bight

Corps Coastal Workshop

A Corps of Engineers Coastal Workshop was held at the Le Meridien Hotel, Dallas, TX, on 9-10 April 1996. Main topic areas were coastal processes, risk and uncertainty analyses, and applications of geotextile tubes. Additional topics were the use of LIDAR surveys of structures, an update on procedures for beach and nearshore surveying, ACES 2.0, and establishment of an Internet site for data. There were also project reports on the Little Talbot Island, FL, feasibility study; Grand Isle, LA, beach fill and segmented breakwaters; and Grays Harbor Entrance, Washington. Presentations were followed by extensive discussion. A summary proceedings is in preparation.

CERC World Wide Web Site

The CERC World Wide Web site celebrated its first anniversary on June 13, 1996. The CERC Web site offers viewers opportunities to learn about what CERC is and the type of work CERC does through more than 275 Web pages.

The Web site is adding new and additional services to provide the coastal community with data, news, links to related oceanographic and coastal sites, announcements of conferences and meetings, CERC publications, and coastal research.

Some examples of information found on the CERC Web site:

- ***Data.*** The Coastal Engineering Data Retrieval System (CEDRS) is a database of wind and wave information, both measured and computer-generated. Surge elevations and currents are also available for the Atlantic and Gulf coasts of the United States. All data are available by anonymous FTP via the Internet.
- ***News.*** Recent issues of the CERCular. The December 1995 and the March 1996 issues of the CERCular are currently available on the CERC Web site. An extensive listing of meetings and conferences relating to the coastal and oceanographic community is also available.
- ***CERC Publications.*** Coastal Engineering Technical Notes (CETN), Dredging Research Program publications, and proceedings of recent Coastal Engineering Research Board (CERB) meetings are available.
- ***Coastal Engineering Manual (CEM).*** Successor to the *Shore Protection Manual.*
- ***Research.*** CERC's Field Research Facility, Tsunami Research, and Rapidly Installed Breakwater System (RIBS).

To view the CERC home page, direct your browser to URL

http://bigfoot.cerc.wes.army.mil

Questions about the CERC Web site should be directed to Doyle L. Jones, CERC webmaster, at Email d.jones@cerc.wes.army.mil.

Calendar of Coastal Events of Interest

A more complete calendar will be found on the World Wide Web at http://bigfoot.cerc.wes.army.mil/event_cal.html.

Aug 7 - 9, 1996	**Coastal Environment '96**, Rio de Janeiro, Brazil, E-mail: cmi@ib.rl.ac.uk
Aug 12 - 17, 1996	**Coastal Zone Canada '96**, Rimouski, Quebec, Canada, POC: M. I. El-Sabh, FAX: (418) 724-1842, E-mail: mohammed_el_sabh@uqar.uquebec.ca, Web: http://www.uqar.uquebec.ca/joh/cza96ang.htm
Aug 13 - 16, 1996	**PORSEC '96**, Pacific Ocean Remote Sensing Conference, Victoria Conference Centre, Victoria, BC, Canada, FAX: (604) 363-6479, ATTN: PORSEC '96, E-mail: porsec96@ios.bc.ca
Aug 26 - 29, 1996	**10th Congress of Asia and Pacific Division**, IAHR, Langkawi Island, Malaysia, POC: Say-Chong Lee, E-mail: iphk@moa.my
Sep 1 - 6, 1996	**25th International Conference on Coastal Engineering**, Peabody Hotel, Orlando, FL, POC: ICCE '96, (512) 994-2376, FAX: (512) 994-2715, Internet: icce96@cbi.tamucc.edu
Sep 16 - 19, 1996	**Littoral '96**, Portsmouth, United Kingdom, E-mail: edwardss@envf.port.ac.uk
Sep 22 - 28, 1996	**INTECOL's V International Wetlands Conference**, Perth, Western Australia, FAX: 61-9-380-1066, E-mail: uwaext@uniwa.uwa.edu.au
Sep 24 - 26, 1996	**HYDRO '96**, Hydrographic Society International Symposium, Rotterdam, The Netherlands, FAX: 31-79-341-5084
Sep 24 - 29, 1996	**Eastern Pacific Oceanic Conference**, Stanford, CA, FAX: (503) 737-2064, E-mail: kosro@oce.orst.edu
Oct 7 - 11, 1996	**International Coastal Symposium**, Bahia Blanca, Argentina, FAX: 54-91-551447, E-mail: postmaster@funcar.org.ar
Oct 12 - 16, 1996	**American Shore and Beach Preservation Association Annual Conference**, Chicago, IL
Oct 21 - 22, 1996	**Tidal Science 1996**, London, England, FAX: 301-286-1760, e-mail: Richard.Ray@gsfc.nasa.gov
Oct 22 - 25, 1996	**Ocean Optics XIII**, Halifax, Nova Scotia, Canada, POC: Trudy D. Lewus, E-mail: trudy@satlantic.com, FAX: (902) 492-4781
Dec 2 - 6, 1996	**Natural and Technological Coastal Hazards**, Tirupati, AP, India, POC: Dr. C. Rajasekara Murthy, FAX: 905-336-4989/6230
Dec 15 - 19, 1996	**American Geophysical Union Fall Meeting**, San Francisco, CA, POC: AGU Meetings, (202) 462-6900
Apr 21 - 25, 1997	**European Geophysical Society 22nd General Assembly**, Vienna, Austria, E-mail: egs@linax1.mpae.gwdg.de, Web: http://www.mpae.gwdg.de/EGS/EGS.html
Jul 1 - 9, 1997	**IAMAS/IAPSO Joint Assembly**, Melbourne, Australia, E-mail: mscarlett@peg.apc.org, Web: http://www.dar.csiro.au/pub/events/assemblies/info.html